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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Complete if Known

Application Number	10/733,451
Filing Date	December 12, 2003
First Named Inventor	HAYKIN, Simon
Art Unit	2643
Examiner Name	N/A
Attorney Docket Number	3244-83

Sheet	1	of	4
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U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

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Examiner Signature	/Daniel Swerdlow/	Date Considered	06/08/2006
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Substitute for form 1449B/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet 2 of 4

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Application Number	10/733,451
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NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
DS	1	BIA, A., "Alopex-B: A new, simpler but yet faster version of the Alopex training algorithm", International Journal of Neural Systems, Special Issue on Non-gradient optimisation methods, pp. 497-507, 2001	
DS	2	BOUDREAUX-BARTELS, G.F., Parks, T.W., "Time-Varying Filtering and Signal Estimation Using Wigner-Ville Distribution Synthesis Techniques", IEEE Trans. on Acoustic, Speech, and Signal-Processing, 34(3):442-451, June 1986	
DS	3	BRUCE, I.C.; SACHS, M.B.; YOUNG, E.D., "An auditory-periphery model of the effects of acoustic trauma on auditory nerve responses", JASA 113(1), January 2003, pp. 369-388	
DS	4	CAMPBELL, D.R., "Binaural sub-band adaptive noise cancellation - some results", University of Paisley, Scotland, UK; presentation	
DS	5	CAMPBELL, D.R. & Shields, P. "Improvements in intelligibility of noisy reverberant speech using a binaural sub-band adaptive noise-cancellation processing scheme", Journal of the Acoustical Society of America, 110(8), 2001, pp. 3232-3242	
DS	6	CAMPBELL, D.R., "Sub-Band Adaptive Speech Enhancement for Hearing Aids", University of Paisley, Scotland, UK	
DS	7	DOUCET, DE FREITAS, GORDON (eds.), Sequential Monte Carlo methods in practice, Springer-Verlag, 2001, pp. 77-93	
DS	8	ELLEDGE, M.E., et al., "A real-time dual-microphone signal-processing system for hearing-aids", J. Acous. Soc. Am., 1999, 106 (Pt. 2): 2227-2282	
DS	9	FRENCH, N.R., STEINERG, J.C., "Factors Governing the Intelligibility of Speech Sounds", 1947, JASA 19, 90-119	
DS	10	FROST, O.L., "An algorithm for linearly constrained adaptive array processor" Proceedings of the IIE, vol. 60, Aug. 1972, 926-935	
DS	11	GRIFFITHS, L.J., Jim, C.W. "An alternative approach to linearly constrained adaptive beamforming", IEEE Transactions on Antennas and Propagation, AP-30, Jan. 1982, 27-34	

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DS	12	GREENBERG, J.E., "Improved design of microphone-array hearing-aids", Ph.D. Thesis, 1994, MIT, Cambridge, MA, pp. 34-75, 141-187	
DS	13	HAYKIN, S., "Kalman Filters", Chapter 10, Adaptive Filter Theory 4th Edition, Prentice Hall, 2002, pp. 468-495	
DS	14	HEINZ, M.G. et al., "Auditory nerve model for predicting performance limits of normal and impaired listeners", 2001, Acoustics Research Letters Online 2(3):91-98	
DS	15	HEINZ, M.G., et al., "Quantifying the implications of nonlinear cochlear tuning for auditory-filter estimates", 2002, J. Acoust. Soc. Am., 111, 998-1011	
DS	16	HOFFMAN, M.W., TRINE, T.D., BUCKLEY, K.M., VAN TASELL, D.J., "Robust adaptive microphone array processing for hearing aids: realistic speech enhancement", J Acoust Soc Am. 1994 Aug; 96 (2 Pt 1): 759-770	
DS	17	LIBERATORE et al., "A new symbolic program package for the interactive design of analog circuits", ISCAS '95, IEEE International Symposium on Circuits and Systems, 1995, Vol. 3 (IEEE, Piscataway, NJ), pp. 2209-2212	
DS	18	MATTHEWS, J.W., "Modeling reverse middle ear transmission of acoustic distortion signals," in Mechanics of Hearing: Proceedings of the IUTAM/ICA Symposium, edited by E. de Boer and M.A. Viergever, Delft U.P., Delft, pp. 11-18	
DS	19	MICHALEWICZ, Z., "Genetic Algorithms + Data Structures = Evolution Programs", Springer-Verlag, 1996, 3rd edition, pp. 57-79	
DS	20	NOBILI, R., & MAMMANO, F., "Biophysics of the cochlea II: Stationary nonlinear phenomenology", J. Acoust. Soc. Am., 1996, 99(4), Pt. 1, 2244-2255	
DS	21	PEAKE, W.T., ROSOWSKI, J.J., LYNCH III, T.J., "Middle-ear transmission: Acoustic versus ossicular coupling in cat and human", 1992, Hear. Res., 57, 245-268	
DS	22	PETERSON, P.M., "Adaptive array processing for multiple microphone hearings-aids", Ph.D. Thesis, 1989, MIT, Cambridge, MA, pp. 37-55, 99-108	

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DS	23	SACHS, M.B. et al., Biological basis of hearing-aid design, (Center for Hearing Sciences and Department of Biomedical Engineering, Johns Hopkins University, Baltimore, MD, 21205, U.S.A.) Ann Biomed Eng 30 2002 Feb pp. 157-68	
DS	24	SCHWARTZ, O. and SIMONCELLI, E., Natural sound statistics and divisive normalization in the auditory system, Advances in Neural Information Processing Systems 13, T.K. Leen, T.G. Dietterich and V. Tresp (eds), MIT Press, Cambridge, MA 2001 pp 1-7	
DS	25	SOEDE, W., BERKHOUT, A.J., and BILSEN, F.A., "Development of a directional hearing instrument based on array technology" J. Acoust. Soc. Am. 94, 785 (1993)	
DS	26	STERN, R.M. and SULLIVAN, T.M., "Robust Speech Recognition Based On Human Binaural Perception", Carnegie Mellon University, Pittsburgh, Pennsylvania	
DS	27	SUMNER, CJ et al., "A revised model of the inner-hair cell and auditory nerve complex" J. Acoust. Soc. Am., 2002, 111 (5), Pt. 1. 2178-2188	
DS	28	TANG, Z., et al., "Genetic Algorithms and their Applications", IEEE Signal Processing Magazine, pages 22-37, Nov. 1996	
DS	29	UNNIKRISHNAN, K.P. and VENUGOPAL, K.P., "Alopex: A correlation-based learning algorithm for feedforward and recurrent neural networks", Neural Computation, 6(3), May 1994	
DS	30	VANDEN BERGHE, J. and WOUTERS, J., "An adaptive noise canceller for hearing aids using two nearby microphones", J. Acoust. Soc. Am. 103(6), June 1998, pp. 3621-3626	
DS	31	ZHANG, X.; HEINZ, M.G.; BRUCE, I.C.; CARNEY, L.H., "A Phenomenological Model for the Responses of Auditory-Nerve Fibers: I. Nonlinear Tuning with Compression and Suppression", JASA 109(2), February 2001, pp. 648-670	

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Sheet

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of

1

Complete if Known

Application Number

10/733.451

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December 12, 2003

First Named Inventor

HAYKIN, Simon

Art Unit

2646

Examiner Name

LE, Huyen D.

Attorney Docket Number

3244-83

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